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V. Abstract of a Register of the Barometer, Thermometer, and Rain, at Lyndon in Rutland; by Thomas Barker, Esq.; with the Rain in Hampshire and Surrey; for the Year 1789. Communicated by Thomas White, Esq. F.R.S.

Read Feb. 17, 1791.

		Barometer.			Thermometer.						Rain.			
					In the House.			Abroad.			Lyndon	Surrey. S. Lambeth.	Hampshire. Selbourn.	Fyfield.
		Highest	Lowest	Mean.	High.	Low.	Mean	High.	Low.	Mean				
		Inches.	Inches.	Inches.	°	°	°	°	°	°	Inch.	Inch.	Inch.	Inch.
Jan.	Morn.	30,25	28,00	29,23	47	27	36	47	13 $\frac{1}{2}$	32	2,604	2,41	4,48	2,98
	Aftern.				50 $\frac{1}{2}$	28	37	51 $\frac{1}{2}$	21 $\frac{1}{2}$	37				
Feb.	Morn.	29,79	28,13	29,18	47 $\frac{1}{2}$	37 $\frac{1}{2}$	42	46	31	37	1,847	2,51	4,11	3,31
	Aftern.				47 $\frac{1}{2}$	39	43	51 $\frac{1}{2}$	36 $\frac{1}{2}$	44				
Mar.	Morn.	29,67	28,50	29,25	40 $\frac{1}{2}$	34 $\frac{1}{2}$	37 $\frac{1}{2}$	37	22	32	1,152	2,32	2,47	2,30
	Aftern.				40 $\frac{1}{2}$	36	38	46 $\frac{1}{2}$	33	40				
Apr.	Morn.	29,70	28,61	29,28	53 $\frac{1}{2}$	39 $\frac{1}{2}$	46	51	32	41	1,010	1,24	1,81	1,58
	Aftern.				56 $\frac{1}{2}$	41 $\frac{1}{2}$	48	67	43	53				
May	Morn.	29,80	29,12	29,42	63	48	55 $\frac{1}{2}$	59 $\frac{1}{2}$	42 $\frac{1}{2}$	50	1,677	2,80	4,05	4,03
	Aftern.				63 $\frac{1}{2}$	49	57	71 $\frac{1}{2}$	45 $\frac{1}{2}$	63 $\frac{1}{2}$				
June	Morn.	29,82	28,92	29,38	64	53 $\frac{1}{2}$	58	62 $\frac{1}{2}$	49	53	4,447	3,66	4,24	5,03
	Aftern.				66	55	59	77 $\frac{1}{2}$	58	67				
July	Morn.	29,63	29,10	29,39	63 $\frac{1}{2}$	56 $\frac{1}{2}$	60 $\frac{1}{2}$	62	49 $\frac{1}{2}$	57	4,259	2,77	3,69	3,95
	Aftern.				65	58 $\frac{1}{2}$	61 $\frac{1}{2}$	78 $\frac{1}{2}$	59 $\frac{1}{2}$	69				
Aug.	Morn.	29,90	29,25	29,61	65	55	62	62 $\frac{1}{2}$	50	57	0,331	1,91	0,99	0,33
	Aftern.				68	59 $\frac{1}{2}$	63 $\frac{1}{2}$	74 $\frac{1}{2}$	60 $\frac{1}{2}$	69				
Sept.	Morn.	29,88	28,85	29,40	63	52 $\frac{1}{2}$	57 $\frac{1}{2}$	57 $\frac{1}{2}$	42	50 $\frac{1}{2}$	2,846	1,87	2,82	3,58
	Aftern.				64	53 $\frac{1}{2}$	59	72	55	63				
Oct.	Morn.	29,84	28,52	29,22	55 $\frac{1}{2}$	43 $\frac{1}{2}$	50	50	32	44	4,931	3,54	5,04	3,35
	Aftern.				57	43 $\frac{1}{2}$	51	62	39	52				
Nov.	Morn.	29,90	28,25	29,26	44	38	42	43	30 $\frac{1}{2}$	36 $\frac{1}{2}$	1,199	—	3,67	1,69
	Aftern.				45	38 $\frac{1}{2}$	42	50 $\frac{1}{2}$	36 $\frac{1}{2}$	43				
Dec.	Morn.	30,04	28,35	29,32	48	37 $\frac{1}{2}$	43	50 $\frac{1}{2}$	30 $\frac{1}{2}$	40	1,699	1,51	4,63	3,48
	Aftern.				48 $\frac{1}{2}$	38 $\frac{1}{2}$	44	52 $\frac{1}{2}$	34 $\frac{1}{2}$	44				
Inches											28,002		42,00	35,61

MANY have thought, that a hard winter generally comes after a wet summer, when the ground has been chilled with cold and rain; so the great frost in 1740 came after a cold wet summer 1739; but it was not so in 1788, which was in general a dry summer, and in some places very much so, and not defective in hot weather. The whole year's rain was 17 inches, which is less than any year since 1750. The autumn was dry and fine, and so free from frosts, that several autumnal flowers were flowering in the garden when the frost began, which are often cut off a month or more earlier.

The last day I have mentioned as mild was Nov. 22. and the first day of the frost Nov. 26; it began in Hampshire three days sooner. But for more than the first fortnight it was very moderate, often freezing at night and thawing in the day; and it began to be severe Dec. 12.; was exceeding cold, and some very sharp winds, and, as there was then no considerable snow, it entered deep into the ground. An imperfect thaw, Dec. 24. and 25. was followed by a great snow, and the frost returned as hard as ever. There came snow again several times; and it lay so loose and hard frozen on the ground, as to be often driving about into very great heaps; till January 13, 1789, when, in one of the worst days of all for storm, snow, and driving, it began to thaw at night; yet the ground was so hard frozen and cold, especially where paths had been swept, that the moisture of the air continued freezing for some days longer in cakes of ice on the bare ground and stones.

It was remarkable that this frost was severer southward than northward, in France than England. It froze over our great rivers, yet not so as to venture to build on them, as was done
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in 1740. It also froze the much larger rivers of Europe, and was in most parts a severe winter; but to the north and north-west of us, it appears not to have been so, and that it was moderate in Scotland, and was chiefly great snows in Ireland.

The air was very sharp during the frost, and it froze exceeding hard, even within doors; yet I have seen the thermometer lower in other frosts than it was in this. The lowest I saw was Jan. 12. at $13^{\circ}\frac{1}{2}$; but in Jan. 1786, it was down at $11^{\circ}\frac{1}{2}$; in the severe frost Jan. 1776, it was 11° and 10° ; Feb. 1784, at 9° ; Dec. 1783, at $8^{\circ}\frac{1}{2}$; and one morning, Feb. 12, 1771, it was down at 4° , which is the lowest I ever saw it.

The frost from Dec. 1739 to Feb. 1740 was the greatest I ever knew, and many trees, shrubs, and plants, were killed by it, or nearly so; but in general they escaped this winter. In most gardens every plant of rosemary was killed that year, few or none were much hurt this winter. In 1740, the wheat in many countries received great damage; in this frost I believe it was very little hurt. Most of the branches of common furze were killed in 1740, many quite down to the ground, and some were entirely destroyed; and I have known many suffer much, and some killed, in 1776, and other hard winters; but this year only a few were much hurt. Many turneps were frozen in the fields this year, a husbandry not so much practised in 1740; and many apples and pears were frozen in the house, where they were not carefully preserved; yet, I think, there was less of this than was apprehended. Artichokes, I think, suffered as much as most things in the garden; some were killed, and others so hurt as to prevent their bearing, but many escaped; but there was a greater loss among them in 1740.

Many walnut-trees were split from the collar to the root by the great frost in 1740, so that a knife might be thrust in eight or ten inches; the clefts closed again in summer, but never united. They grew out into a seam higher than the rest of the wood, and have so continued ever since, yet without hurt either to the growth or bearing of the trees, and several of them were again split by the late frost. Such seams may be seen on many walnut-trees where the cause is not remembered. It seems odd, that clefts which did not affect the growth of a tree should yet never heal, but remain an indelible mark for so long a time; but it seems to me, that if wood is once parted, it will never join again, for the whole growth of a tree is between the bark and the wood; but the cleft may be covered over with new wood, as we sometimes see a branch broken off when the tree is young covered over with a great thickness of timber. I have known several ash trees split by lightning without a twig being killed; but, in several years they stood afterward, there were no signs of their uniting again. In an oak, which had some bark struck off by the same means last year, but is not split that I know of, some of the lesser branches withered.

One thing seems to have been more common this year than in 1740, and that was the loss of fish in ponds. Where the ponds were deep, well supplied with water, and the ice unbroken, no fish died; but where the water was shallow, little or no current, and the ice kept broken, many perished; and in some places, where all these causes concurred, they were all killed. The difference might arise from the want of water this year after a dry autumn, of which there was no defect in 1739. Carp were taken out of a pond where the ice was broken, frozen crooked and stiff without the least motion, and
ice

ice hanging about them; but, being laid on dry straw in a cellar, they all recovered. Some have made a practice of breaking the ice to give the fish air; but, by all the examples I heard of in this frost, it appears to be a great mistake, and that they are much safer without it.

Times of distress will make creatures look out for unusual food. A land animal does not seem naturally to live on fish; but in this frost a fox was frequently tracked to the mouth of a covered drain, just deep enough to let in the fish from a pond, and was one morning seen eating one on the bank, the blood of which was traced on the snow to the drain, shewing plainly that it came from thence.

After the frost broke it was windy and wet, and the air did not become mild for ten days or a fortnight; and the ground was so dry within, that the melting of the snow and the rain together did not make great floods. It continued often windy and showery till March; but from the latter end of January it was, as to warmth, mild. With March the winter returned, there was almost constant north winds, frosty mornings or quite frost, and sometimes hard and frequent snow. This stopped the seed time, which was begun before, and made it late; but when it did come, it was good. The spring was backward, and frequent frosty mornings; but mended gradually, and things came on, though slowly, and the spring was dry till the middle of May.

Then came a showery and fine growing time for three weeks, and after a short time it became hot and dry. The middle of June a wet season began with a very great rain, and it was wet without interruption till the end of July. There was a great deal of hay made this year, but little of it right good. Many of the meadows were flooded; the uplands could not be well gotten for

the wet; there were great eddishes, and a vast deal of late grafs, much of which was well made into hay in August, which was a fine dry summer month; but such late grafs is not so good as the earlier. This month was rather an interruption than a ceasing of the wet season, which began again the beginning of September, and continued to the end of the year, but the rain fell in less quantity from the middle of October to the middle of December; but the season has been very open and mild, scarcely any frost, and the ground still green at Christmas.

The summer was so wet there was very little honey this year. The growth of trees was very great; many shoots were three and four feet long or more; and a young ash tree, of six feet high, in the garden, made a shoot five feet and an half long, and as thick as a finger. The grain was very rank and foul; there was bulk enough upon the ground, but it yielded very badly to the thresher, perhaps not greatly amiss to the acre. Harvest being late, but little was got in during the fine month of August: the white corn was however carried in tolerable order; but a great many of the beans and pease were spoiled.

